

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 15-45 are pending in the present application Claims 15, 18-20, 23, 24, 26, 29 and 30 have been amended and Claim 45 has been added by the present amendment.

During the interview conducted on August 14, 2003, the Examiner indicated he believes Weber et al. teaches at least one first refractive dielectric oxide or nitride layer between an absorber layer and a metallic layer of the window electrode. In more detail, the Examiner indicated Weber et al. teaches optionally doping the zinc oxide layer 22, which one skilled in the art would interpret as meaning the zinc oxide layer does not necessarily have to be doped (see column 3, lines 67 and 68). However, based on the entire teaching of Weber et al., Applicants submit one skilled in the art would clearly understand that the zinc oxide layer 22 has to be doped so the layer 22 would be conductive. That is, Weber et al. teaches the light transmitting conductive film or layer 18 includes a first light transmitting, electrically conductive layer 22 (see column 2, lines 57 and 58). Thus, it is clear the layer 22 would have to be doped to be conductive. Further, column 4, lines 1-5 indicates that the oxides ZnO, etc. are particularly preferred for the first layer 22 because of the ease with which they may be doped. This also indicates that the layer 22 is clearly doped so as to be conductive. Accordingly, it is respectfully submitted Weber et al. does not teach or suggest a refractive dielectric oxide or nitride layer between the absorber layer and the metallic layer of the window electrode, but rather teaches a conductive layer 22 between the absorber layer and the metallic layer of the window electrode.

The discussion then turned to Chen et al. The Examiner indicated Chen et al. teaches a dielectric layer 50b between a metal layer 60 and an absorber layer 30 (see Figure 1, for example). However, Applicants note independent Claims 15 and 24 have been amended to

recite that the thin-film solar cell includes one or more first refractive dielectric oxide or nitride layer between the absorber layer and the metallic layer of the window electrode. That is, the claimed invention may include two dielectric layers or in other words, one layer made of dielectric sub-layers. Thus, each of the dependent claims recite that the thin-film solar cell includes one or more refractive dielectric oxide or nitride layer. Chen et al. does not teach or suggest such a feature. Rather, Chen et al. discloses a high conductivity ZnO layer 50a with a high resistivity ZnO layer 50b.

Further, Berman et al. teaches the zinc oxide in contact with the semiconductor must be electrically conductive to permit low resistance contacts (see column 9, lines 30-35). Thus, there would be no motivation to combine Berman et al. with the above-noted references.

In addition, independent Claim 33 recites that the at least one refractive dielectric oxide or nitride layer has a thickness of about 30 to about 50 nanometers. It is respectfully noted none of the above references teach or suggest the claimed dimensions.

Further, during the interview, the Examiner questioned how the invention would work if the refractive dielectric oxide or nitride layer is not conductive. Applicants note that the invention works because thin layers of dielectric or oxide nitride are thin enough to allow a sufficient electrical contact. Thin layers like this even allow the tunneling process to occur: this transport mechanism is known in modern quantum mechanics and can be observed in devices like the claimed invention. The charge carriers can pass the very thin electrical barrier (in terms of space), as in terms of quantum physics they are not localized. Thus, there is a finite probability that they pass the barrier. The applied art do not teach or suggest the claimed one or more refractive dielectric oxide or nitride layer.

In addition, new Claim 45 has been added to said forth invention in a varying scope. In particular, new Claim 45 recites that the fin-film solar cell includes a single refractive

dielectric oxide or nitride layer between the absorber layer and the metallic layer of the window electrode. Applicants respectfully submit that the new claim supported by the originally filed specification and is allowable as the prior art does not teach or suggest the claimed single refractive dielectric oxide and nitride layer.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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